

### Amendments to the Claims

The claims have been amended as follows. Underlines indicate insertions and ~~strikeouts~~ indicate deletions.

Claims 1-44. (Cancelled).

45. (New) A method of preparing an expression system and producing a protein, the method comprising:

defining a set of controlled conditions;

providing a controlled environment agriculture (CEA) bioreactor comprising the set of controlled conditions;

introducing nucleic acid material into a plant host to form a transgenic plant, the nucleic acid material comprising a coding sequence encoding a protein of interest operably linked to an inducible promoter, the inducible promoter being inducible by at least one condition comprised by the set of controlled conditions;

cultivating the transgenic plant in the bioreactor; and

collecting the protein of interest from the transgenic plant.

46. (New) The method of claim 45 wherein the inducible promoter is inducible by a controlled condition selected from the group consisting of light, darkness, carbon dioxide, heat and chemicals.

47. (New) The method of claim 45 wherein the host is contained within a genus selected from the group consisting of *Solanum*, *Spinacia* and *Brassica*.

48. (New) The method of claim 45 wherein the inducible promoter is light-inducible and the set of controlled conditions comprises at least 8 hours of light per day.

49. (New) The method of claim 48 wherein the inducible promoter comprises a promoter from a ribulose bis-phosphate carboxylase small subunit gene.

50. (New) The method of claim 45 wherein the inducible promoter is heat inducible and wherein the set of controlled conditions comprises a temperature of from 25°C to 40°C.

51. (New) The method of claim 50 wherein the inducible promoter comprises a promoter from an hsp80 gene.

52. (New) The method of claim 45 wherein the inducible promoter is CO<sub>2</sub>-inducible and wherein the set of controlled conditions comprises an environmental CO<sub>2</sub> concentration of from 350 ppm to about 2,500 ppm.

53. (New) The method of claim 45 wherein the inducible promoter is from a gene selected from the group consisting of a proteinase inhibitor I gene, a aminotransferase gene, a pathogenesis-related beta 1,3-glucanase gene, a lipoxygenase I gene, a heat shock protein gene, and a ribulose bis-phosphate carboxylate small subunit gene.

54. (New) The method of claim 45 wherein the transformed plant is potato, wherein the inducible promoter is light-inducible, and wherein the set of controlled conditions comprises at least 12 hours of light per day.

55. (New) The method of claim 45 wherein the transformed plant is mustard.

56. (New) An expression system produced according to the method of claim 45.

57. (New) The expression system of claim 56 wherein the transformed plant is contained within a genus selected from the group consisting of *Solanum*, *Spinacia* and *Brassica*.

58. (New) A method of producing a protein of interest comprising:  
providing a controlled environment agriculture (CEA) bioreactor comprising a set of controlled conditions;  
forming a transgenic plant by introducing a nucleic acid into a plant host, the nucleic acid comprising an inducible promoter operably linked to a coding sequence which encodes the protein of interest, the inducible promoter being inducible by at least one condition comprised by the set of controlled conditions;  
cultivating the transgenic plant within the CEA bioreactor; and  
collecting the protein of interest from the transgenic plant.

59. (New) The method of claim 58 wherein the inducible promoter is inducible by a member selected from the group consisting of light, darkness, carbon dioxide, heat and chemicals.

60. (New) The method of claim 58 wherein the host is a member of a genus selected from the group consisting of *Solanum*, *Spinacia* and *Brassica*.

61. (New) The method of claim 58 wherein the inducible promoter is light-inducible and the set of controlled conditions comprises at least 8 hours of light per day.

62 (New) The method of claim 58 wherein the inducible promoter is heat inducible and wherein the set of controlled conditions comprises a temperature of from 25°C to 40°C.

63 (New) The method of claim 58 wherein the inducible promoter is CO<sub>2</sub>-inducible and wherein the set of controlled conditions comprises an environmental CO<sub>2</sub> concentration of from 350 ppm to about 2,500 ppm.

64 (New) A protein production system for producing a protein of interest comprising:

a controlled environment agriculture (CEA) bioreactor comprising a set of controlled conditions; and

a crop of transgenic plants grown in the CEA bioreactor having a heterologous nucleic acid sequence comprising an inducible promoter operably linked to a coding sequence which encodes a protein of interest, the promoter being inducible by an inducing condition comprised by the set of controlled conditions, the inducing condition comprising a value that has been determined to maximize a collectible amount of the protein of interest from the transgenic plant.

65 (New) The protein production system of claim 64 wherein the inducible promoter is light-inducible and wherein the inducing condition comprises at least 8 hours of light per day.

66. (New) The protein production system of claim 64 wherein the inducible promoter is heat inducible and wherein the inducing condition comprises a temperature of from 25°C to 40°C.

67. (New) The protein production system of claim 64 wherein the inducible promoter is CO<sub>2</sub>-inducible and wherein the inducing condition comprises an environmental CO<sub>2</sub> concentration of from 350 ppm to about 2,500 ppm.

68. (New) The protein production system of claim 64 wherein the CEA bioreactor includes a hydroponic system.

69. (New) The protein production system of claim 64 wherein the CEA bioreactor comprises an aerosol delivery system.